

REMARKS

Claims 1-14 are pending in the present application.

Claim 1 has been amended to recite that the photocurable resin composition forms a layer, to be consistent with the subsequent formation of an optically cured resin layer as recited in claim 1. Claims 1 and 5 have been amended to recite that a planar plotting mask is moved over plotted areas such that overlaps are formed between adjacent ones of the plotted areas, and that a computer is utilized to generate mask images to attenuate a visual noticeability of the overlaps. Support for the amendments to claims 1 and 5 can be found, for example, in the claims as filed, at Fig. 1, and page 11, lines 9-20 of the specification as filed. Claims 2, 6, and 10-14 have been amended to be consistent with claims 1 and 5. Claim 9 has been amended to be in better form. No new matter has been added, and Applicant respectfully requests that the amendment to the claims be entered.

Claims 1, 4, 5, 8, 10, and 14, are rejected under 35 U.S.C. § 103(a) as obvious over Japanese Patent Application Publication No. JP 03-281329 (Kihara) in view of U.S. Patent No. 6,500,378 (Smith). The Examiner alleges that Kihara discloses an optical three-dimensional shaping process for forming a three-dimensional object including exposing a photocurable resin to a light source through a planar exposure mask. The Examiner also alleges that Kihara teaches continuously changing the planar plotting mask and continuous motion of the planar plotting mask.

Regarding claim 1, the Examiner acknowledges that Kihara does not teach performing an optical building operation such that a computer is utilized to generate mask images to attenuate a visual noticeability of boundary areas among adjacent plotted areas in the optically cured resin layer, but relies on Smith for this teaching. The Examiner alleges that Smith teaches the use of computer control to alter laser intensity to form adjacent boundaries of laminates successively built up to ensure that adjacent boundaries are continuous and integrated and concludes that it would have been obvious to use a computer to generate a mask to eliminate surface defects in

adjacent laminate areas. Applicant respectfully but strenuously traverses the rejection of claims 1, 4, 5, 8, 10, and 14 for the reasons set forth below.

Claim 1, as amended, recites that that a planar plotting mask is moved over plotted areas such that overlaps are formed between adjacent ones of the plotted areas, and that a computer is utilized to generate mask images to attenuate a visual noticeability of the overlaps. Kihara fails to disclose or suggest the formation of overlaps between plotter areas. Smith specifically teaches away from the formation of overlaps by stating at col. 2, lines 41-43, that overlapping greatly increases processing time. Moreover, the solution in Smith, as disclosed at column 6, is that mirror surfaces on the spatial light modulator 4 each represents a pixel or other suitable discrete quantity of information, which can be used to direct the radiation for curing of a resin. Such control of the mirrors to the pixel level permits the creation of a pattern where there is no overlap since the pixels can be controlled one-by-one to be cured as appropriate. Thus, there is no teaching in either Kihara or Smith of the formation of overlaps between plotter areas, in contrast to the recitation of claim 1.

Additionally, Kihara and Smith fail to disclose a computer being utilized to generate mask images to attenuate a visual noticeability of the overlaps. Since there are no overlaps disclosed in Kihara or Smith, as explained above, it is axiomatic that there is no disclosure of a computer being utilized to generate mask images to attenuate a visual noticeability of the overlaps. Additionally, Kihara fails to disclose a computer being utilized at all.

The Examiner alleges at page 4 of the Office Action that Smith teaches the use of computer control to alter intensity in an effort to rapidly form adjacent boundaries of laminates that are successively built up in an effort to ensure that the adjacent boundaries are continuous and integrated. However, the reference to being continuous in Smith is a reference to successive layers which are placed on one another. At column 3, lines 57-59, Smith discloses that “[t]he laminae are adjoined one to the other so that the successive laminae form a continuous solid object comprising the cured material.” Thus, it is the successive laminae which are supposed to form a continuous solid object. There is no disclosure in Smith of attenuating the visual

noticeability in the boundaries of plotted areas within any one layer. In other words, Smith discloses the formation of a continuous multi-layered structure, rather than attenuation of boundaries between plotted areas, which are part of the same layer. Thus, Kihara fails to disclose or suggest attenuation of a visual noticeability of overlaps and Smith fails to cure this deficiency, in contrast to the recitations of claim 1.

Additionally, although the Examiner contends at pages 4-5 of the Office Action that it would have been obvious to use a computer to generate a mask and eliminate surface defects in adjacent laminae areas in Kihara in view of Smith, there is no such disclosure in Kihara or Smith. In Smith, as is clear from column 4, lines 32-34, only a single pass of curing is made for any one layer, and therefore no boundary overlap occurs, and no defects due to overlaps are addressed.

In view of the above, claim 1 distinguishes over Kihara in view of Smith. Claim 5 is distinguishable over Kihara in view of Smith for the same reasons as claim 1. Claims 4, 8, 10, and 14 depend from claim 1 or 5 and are therefore patentable at least for the reason that they depend from a patentable base claim. Reconsideration and withdrawal of the rejection of claims 1, 4, 5, 8, 10, and 14 over Kihara in view of Smith are respectfully solicited.

Claims 2, 6, and 11 are rejected under 35 U.S.C. § 103(a) as obvious over Kihara in view of Smith and in further view of European Patent Application No. EP 1192041 B1 (Pollack). Claims 3-4 and 7-8 are rejected under 35 U.S.C. § 103(a) as obvious over Kihara in view of Smith and in further view of U.S. Patent No. 6,461,797 (Lercel). Claims 9, 12, and 13 are rejected under 35 U.S.C. § 103(a) as obvious over combinations of one or more of Kihara, Smith, U.S. Patent No. 3,718,396 (Hennings), U.S. Pre-Grant Publication No. 2002/0149137 (Jang), and U.S. Patent No. 6,264,873 (Gigl).

Claims 2-4, 6-9, and 11-13 depend from claim 1 or claim 5 and are patentable at least for the reason that they depend from a patentable base claim. The disclosures of Pollack, Lercel, Hennings, Jang, and Gigl fail to cure the deficiencies identified above regarding Kihara and

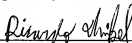
Smith. Accordingly, reconsideration and withdrawal of the rejections of claims 2-4, 6-9, and 11-13 are respectfully requested.

CONCLUSION

In view of the foregoing Amendments and Remarks, Applicant respectfully submits that the claims are in proper form and distinguish over the cited art. Therefore, the present application is in condition for allowance. Reconsideration and an early Notice of Allowance are respectfully requested.

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Respectfully submitted,

By  _____

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